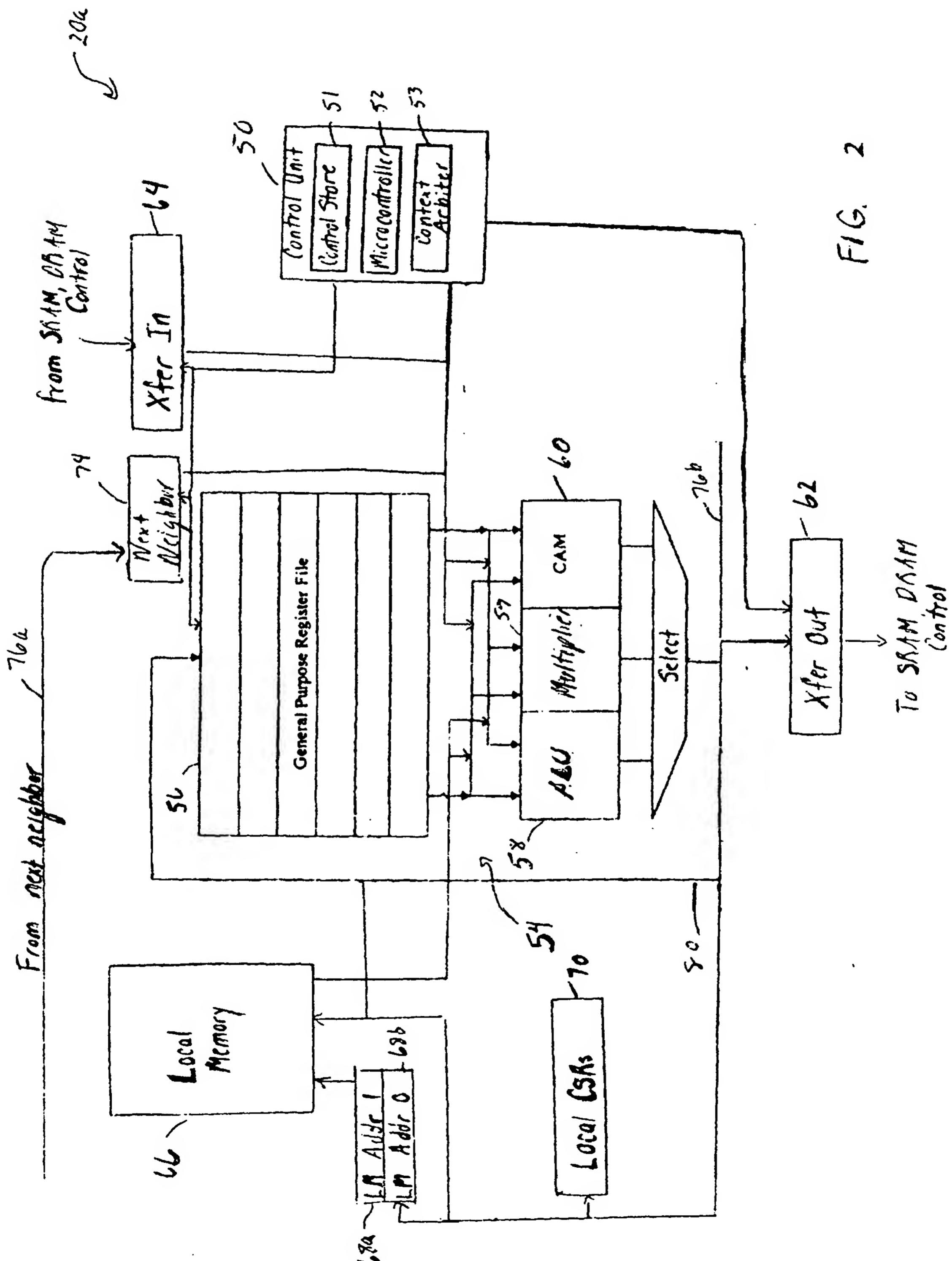


FIG. 1



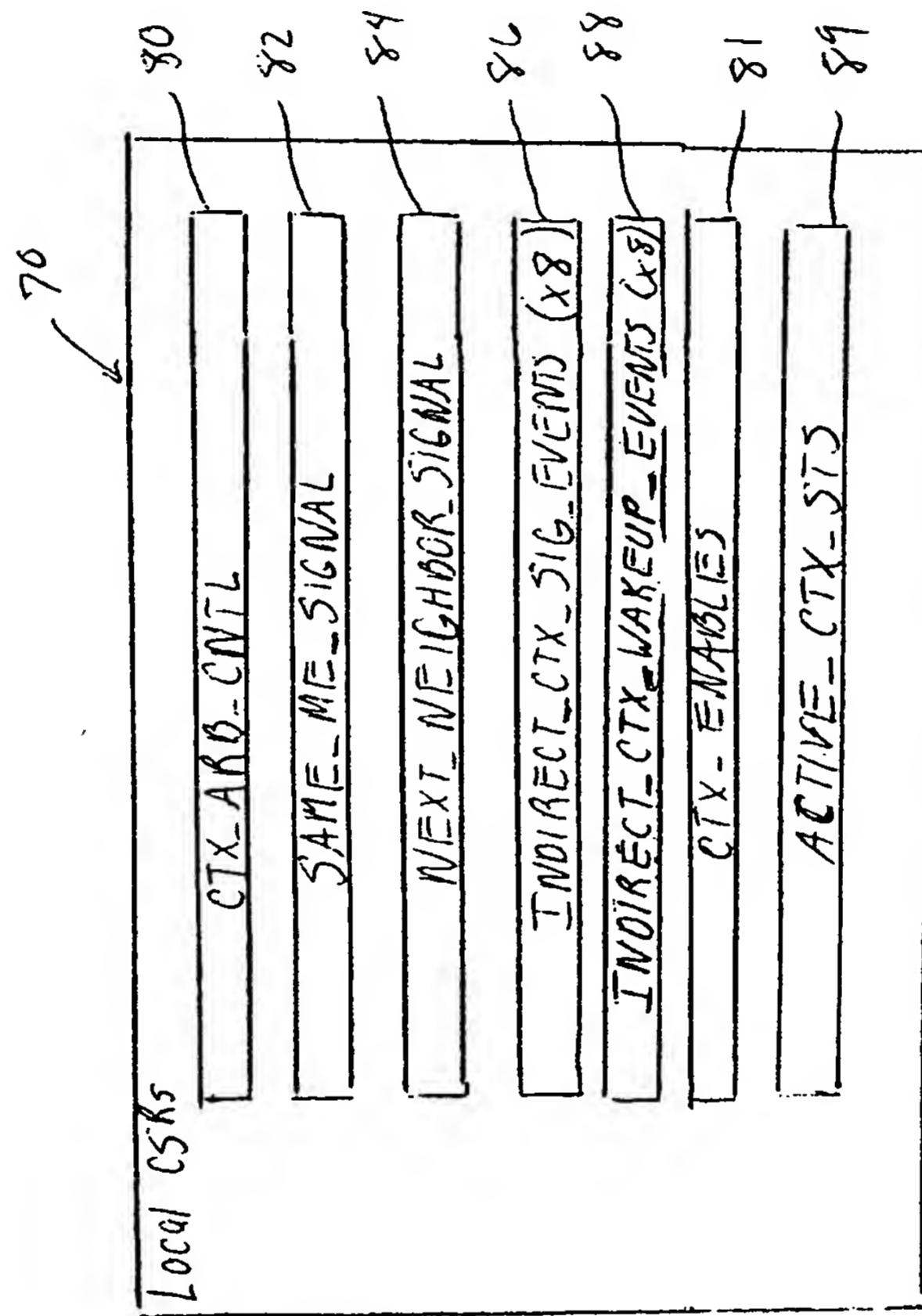


FIG. 3

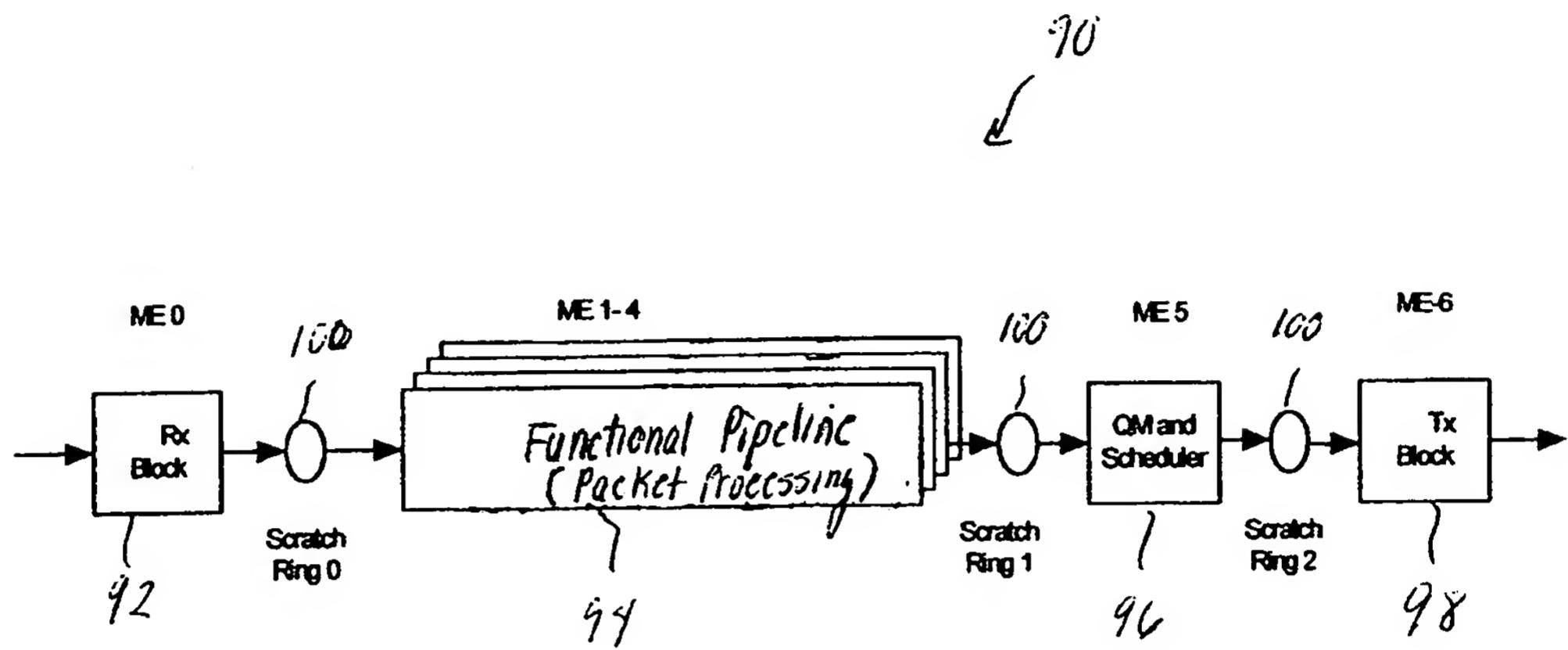


FIG. 4

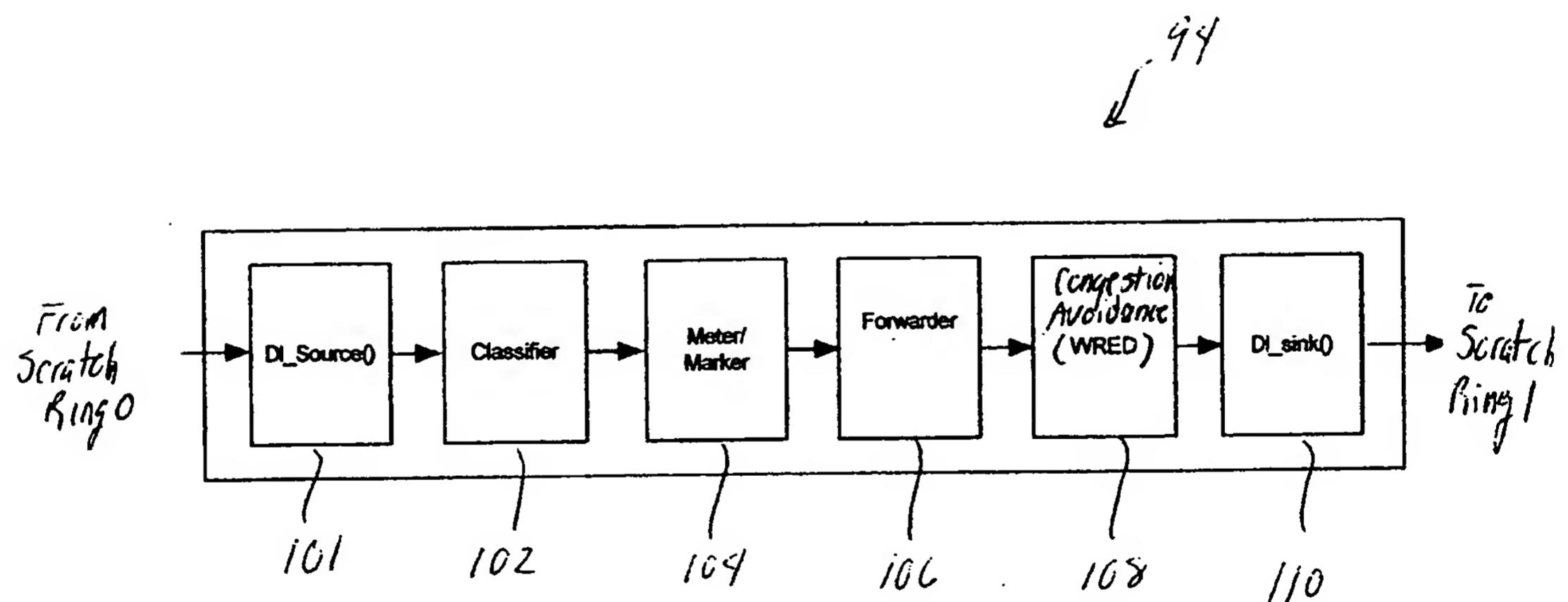


FIG. 5

120

Register Name	Latency in terms of instructions			Usage Latency Comments
	Write	Read	Usage	
SAME_ME_SIGNAL	3	2	8	The same ME will be signaled 8 cycles after the CSR write.

122

FIG. 6

```

wred()
{
    if(ctx() == 0)
    {
        //Wait for signal from previous ME and thread 7
    }
    else
    {
        wait_for_all(&next_thread_signal, &wred_next_me_sig);
        cam_clear();
    }
    .....
    .....
    // WRED packet processing
    .....
    signal_next_thread() // Instruction 1 ← 134

    .....
    // There is a minimum of 3 cycles delay between instruction 1 and instruction 2
    // to allow the signal to propagate and to ensure thread execution sequence.

    .....
    // Wait for previous thread signal
    wait_for_sig(&sig); // Instruction 2 ← 136

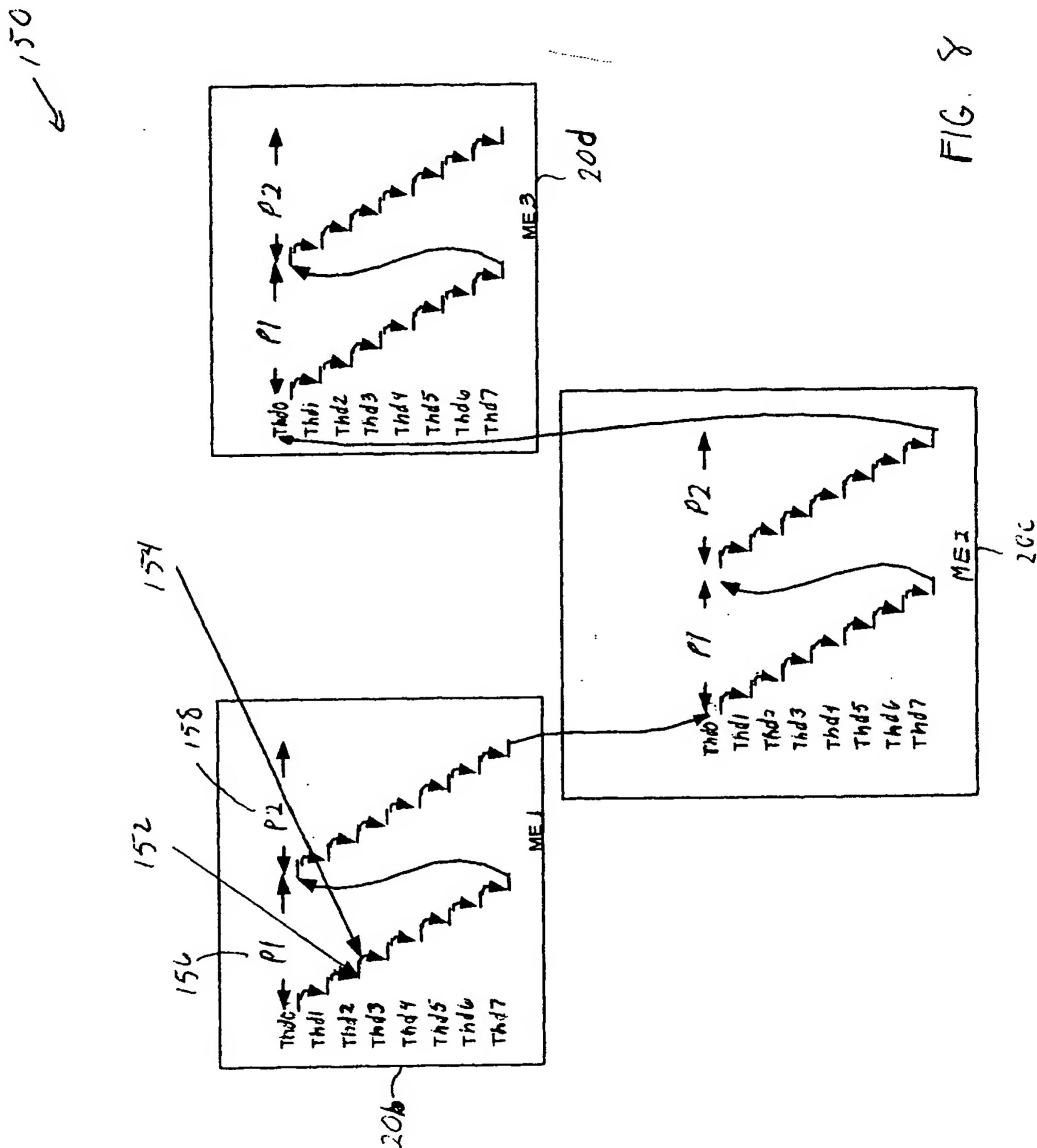
    .....
    if(ctx() == 7)
    {
        // Signal next ME
        cap_fast_write(wred_me_sig_csr, csr_interthread_sig);
    }
    else
    {
        // The thread gives up the context voluntarily at this point to ensure that
        // thread 7 gets control as early as possible. If no context swap occurs
        // here the thread would continue to execute non-critical section code or
        // next microblock, thereby delaying thread 7 getting the control.
        ctx_arb(voluntary); ← 140
    }
    .....
    // Critical section processing ends

    .....
    // Non-critical section code or code for next microblock begins
}

```

Handwritten annotations with curly braces and arrows pointing to specific code lines:

- A curly brace on the right side of the code groups lines 130 and 132, with an arrow pointing to line 130.
- A curly brace on the right side of the code groups lines 134 and 136, with an arrow pointing to line 134.
- A curly brace on the right side of the code groups lines 138 and 140, with an arrow pointing to line 138.



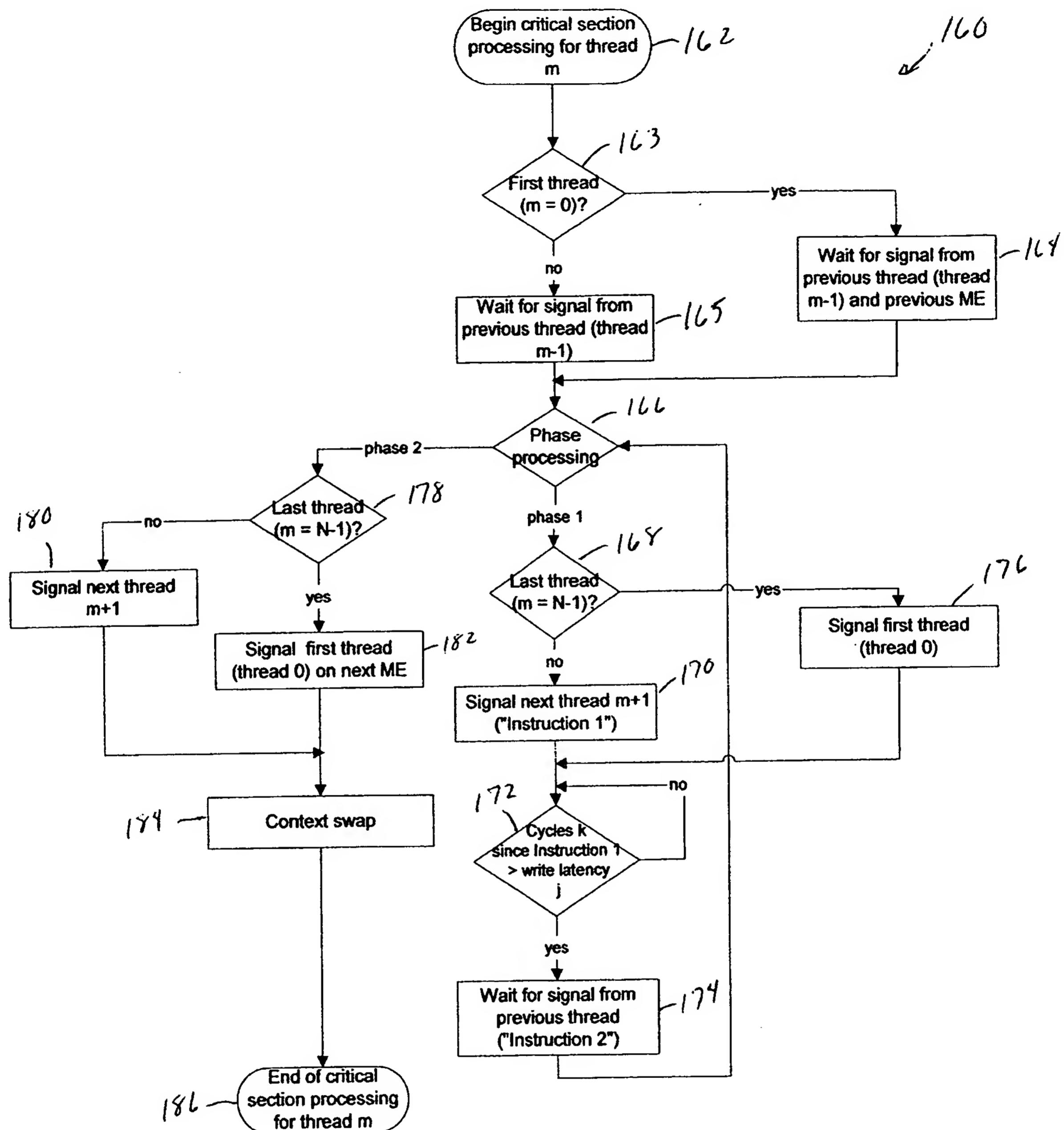


FIG. 9

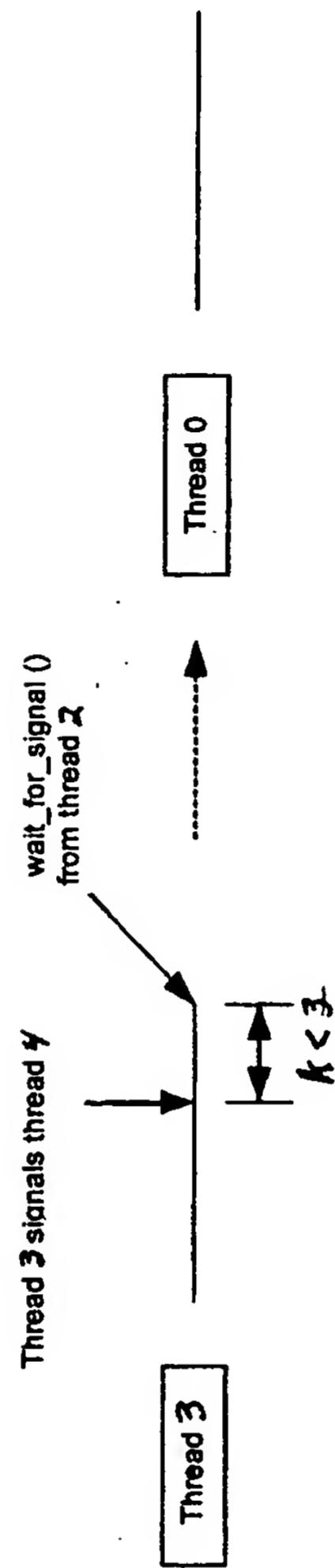


FIG. 10A

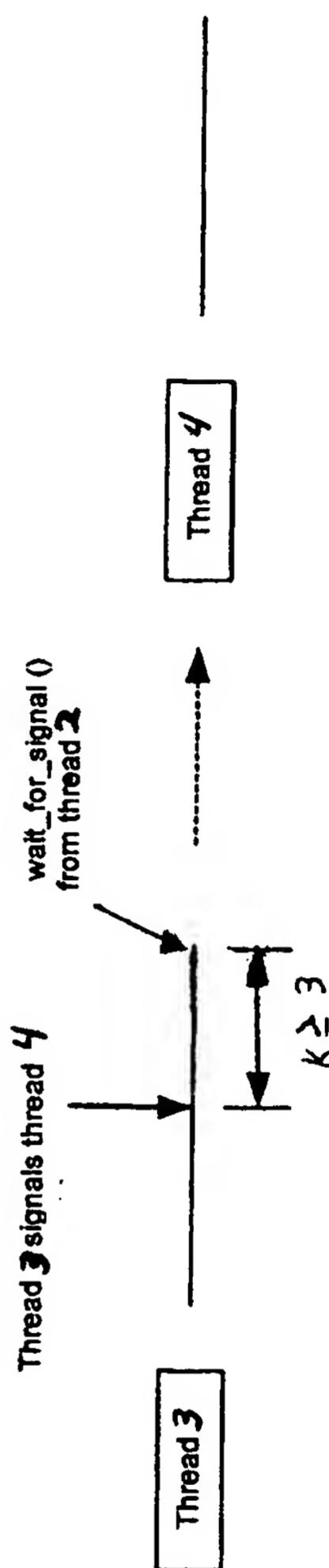


FIG. 10B

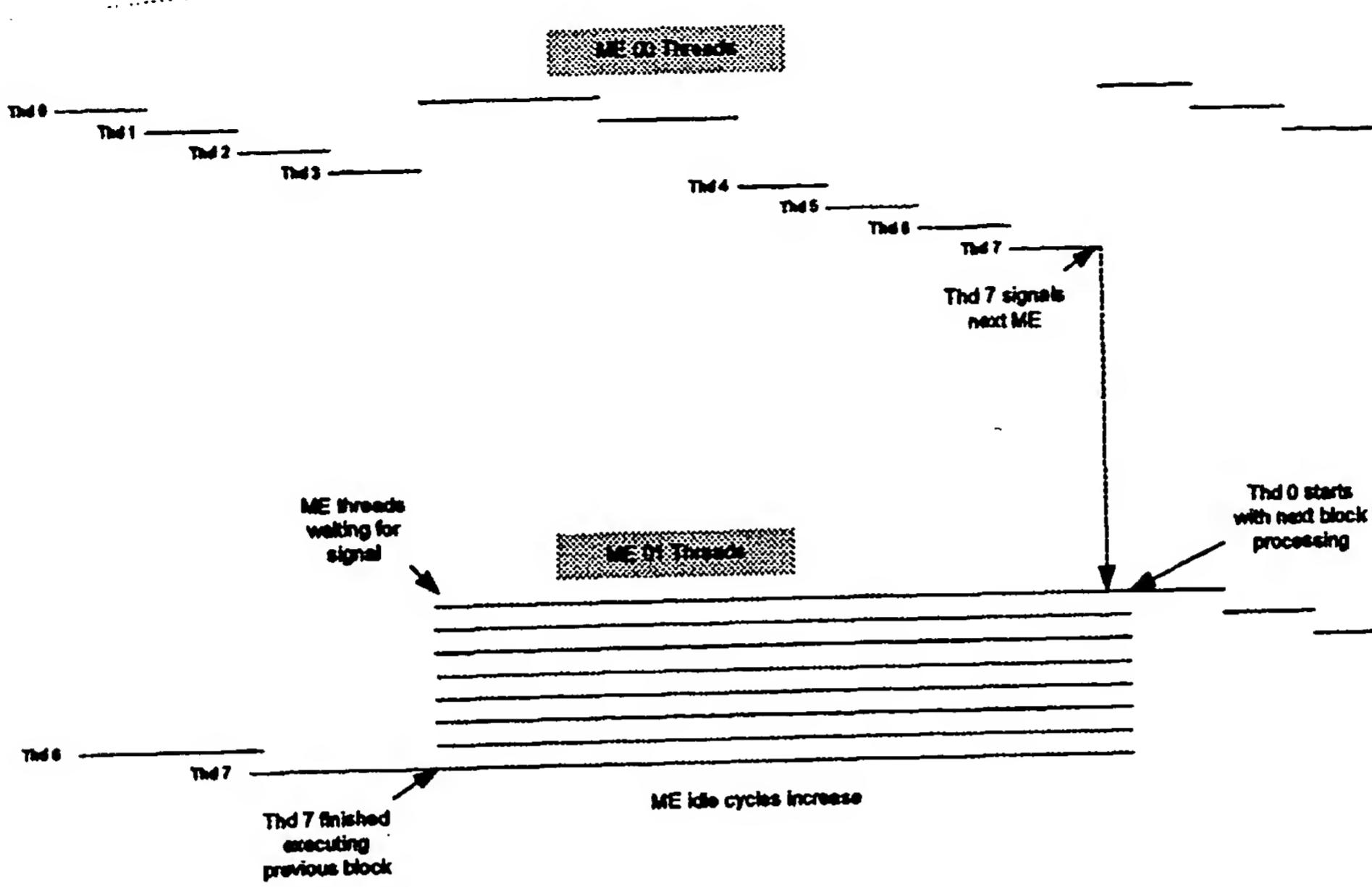


FIG. 11A

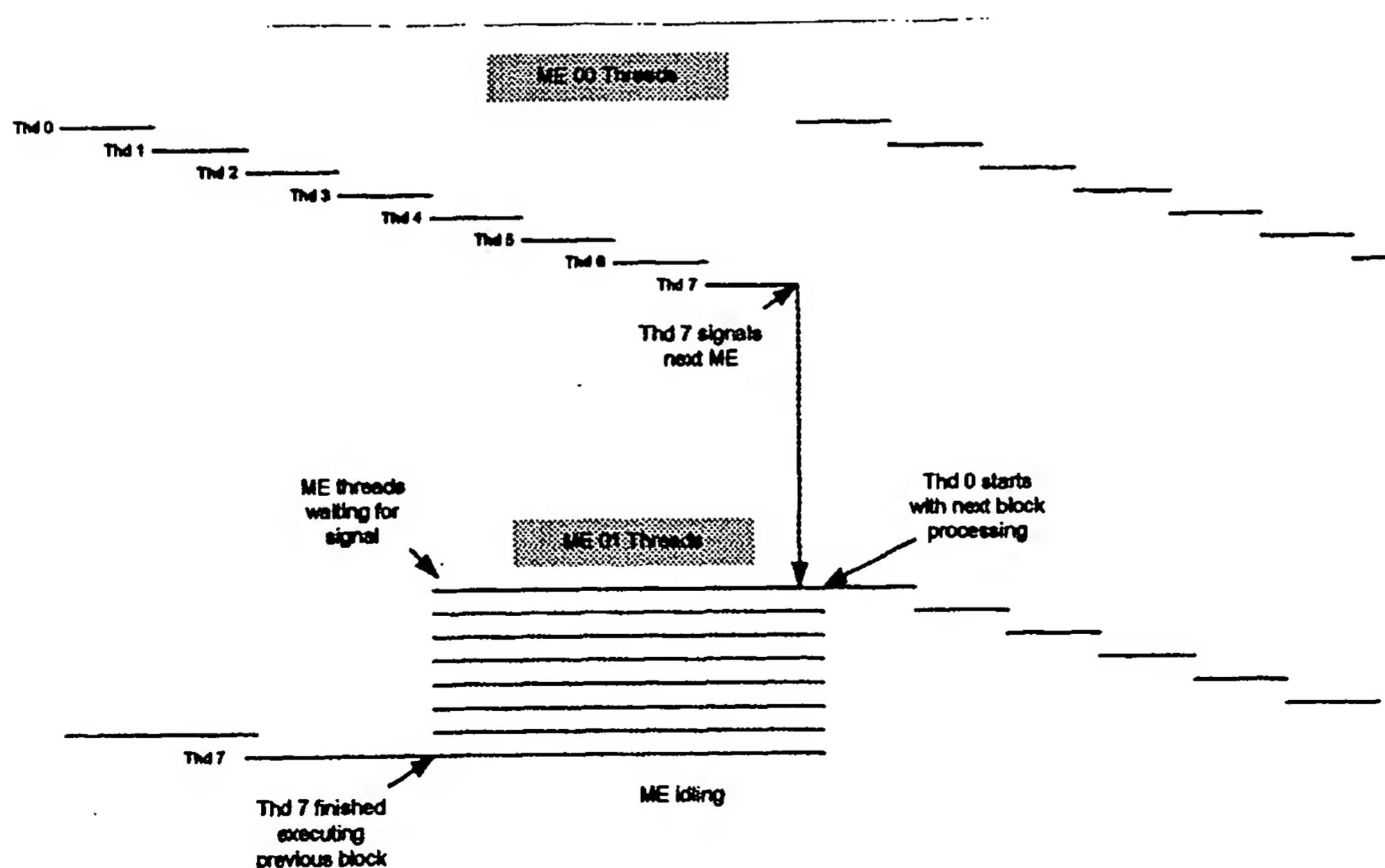


FIG. 11B

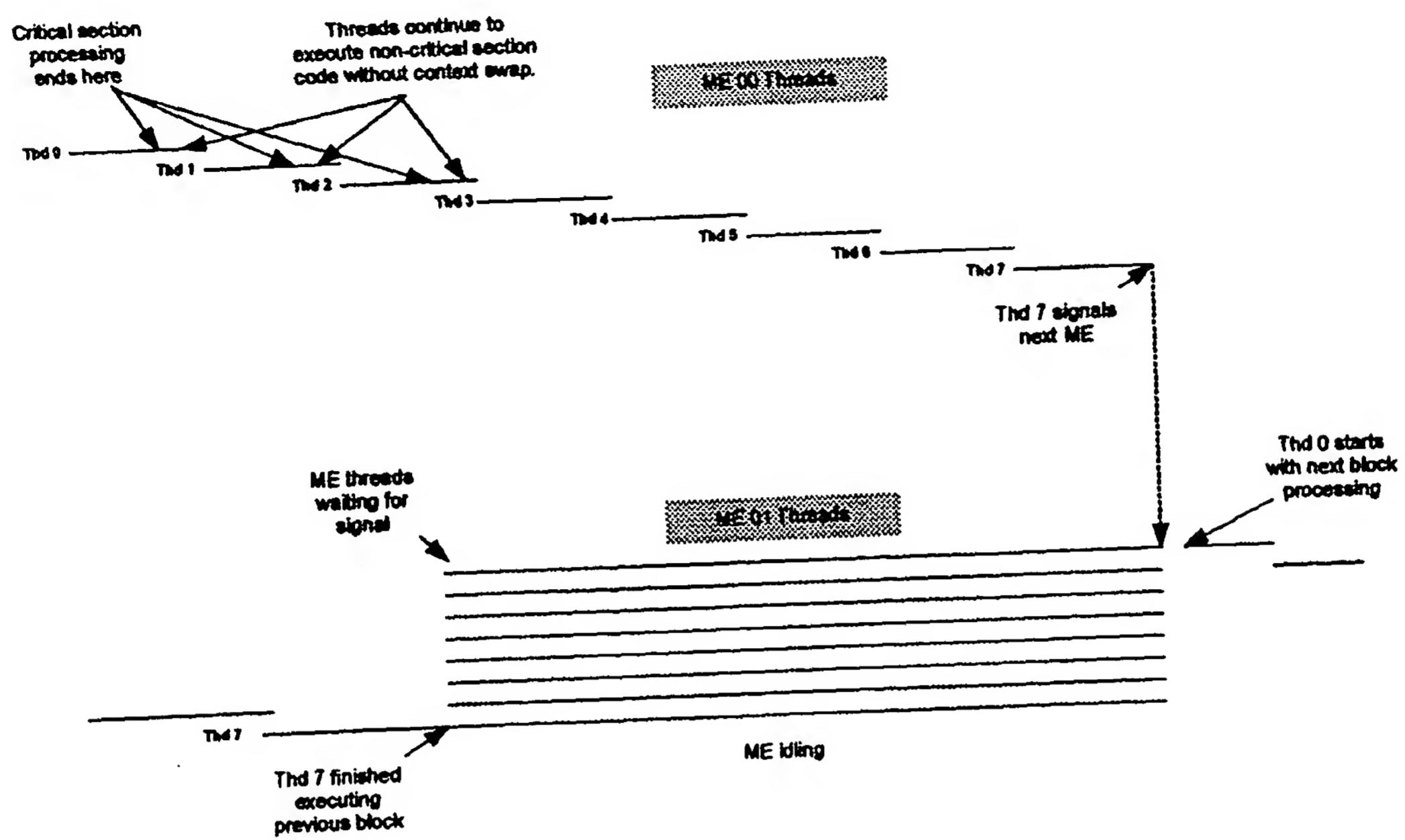


FIG. 12A

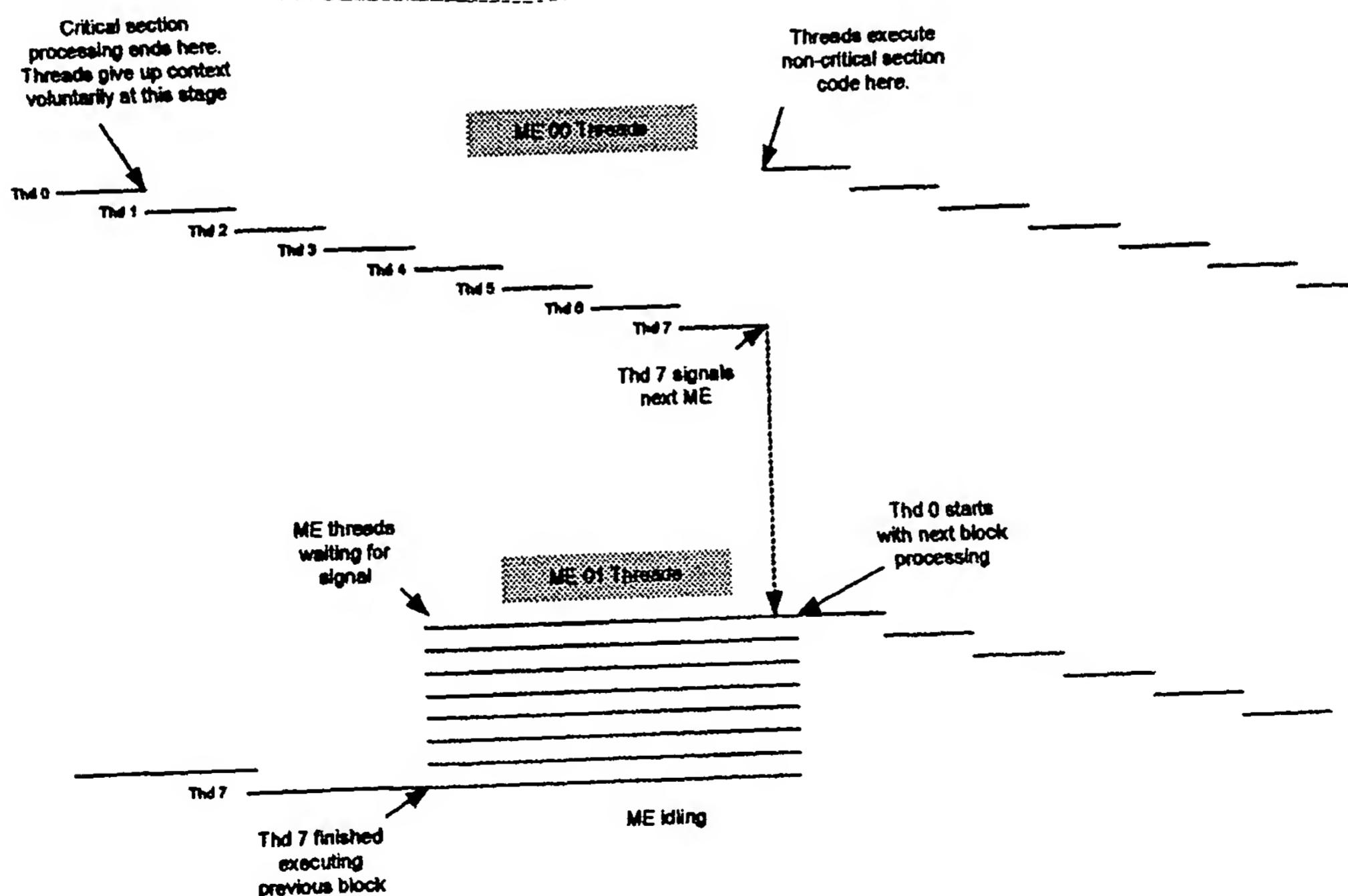


FIG. 12B

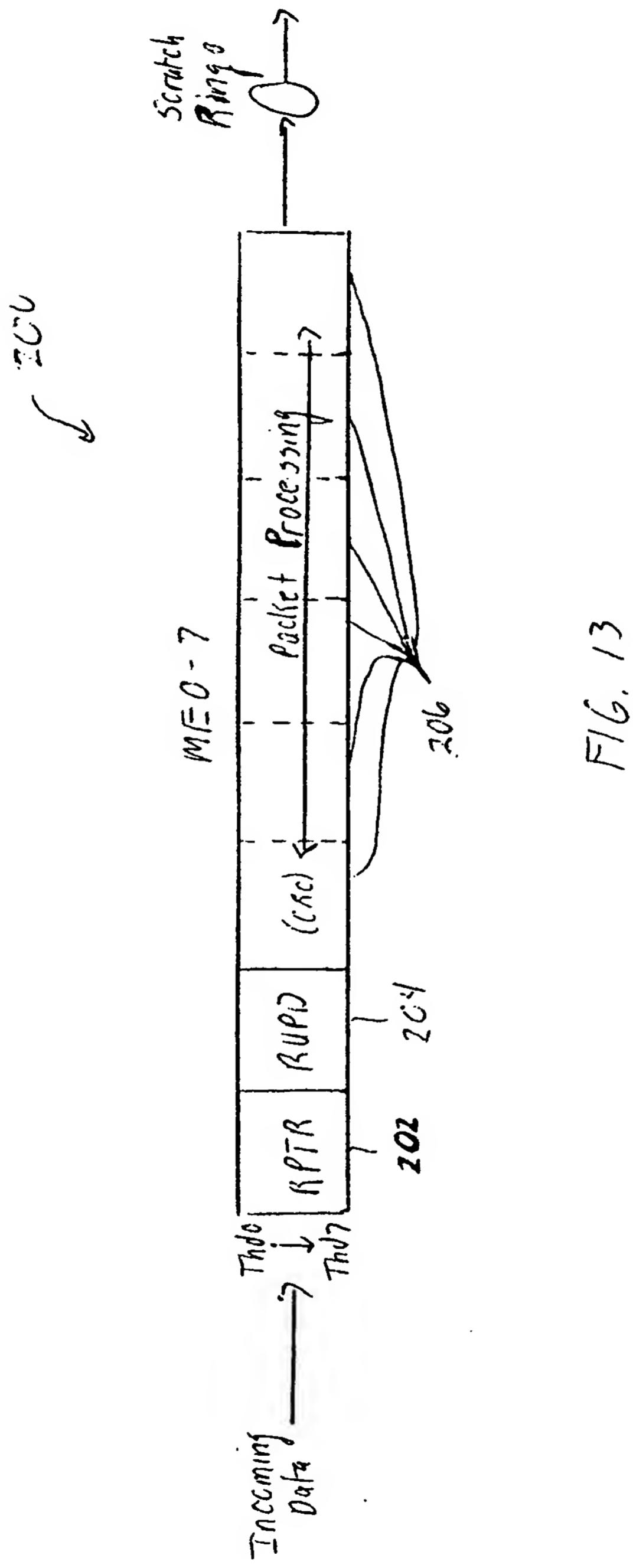


FIG. 13